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(71) Applicant : **CARBOFUEL OFFICINE MECCANICHE S.P.A.**
Via A. Colombo, 110
I-21055 Gorla Minore (Varese) (IT)

(72) Inventor : **Carpaneto, Giacomo, c/o CARBOFUEL OFFICINE MECCANICHE S.p.A., Via A. Colombo, 110**
I-21055 Gorla Minore (Varese) (IT)

(74) Representative : **Cicogna, Franco**
Ufficio Internazionale Brevetti Dott.Prof. Franco Cicogna Via Visconti di Modrone, 14/A
I-20122 Milano (IT)

(54) Fitting for coupling air and fume pipes in tightly enclosed boilers.

(57) There is disclosed a fitting for coupling air and fume pipes in tightly enclosed boilers, with flue elements having a double stainless steel wall construction, which fitting comprises two coaxial ducts, the outer duct of which, of smaller length,encompasses the inner duct at one end thereof so as to define with the latter a gap including a plurality of air inlets, the inner duct and gap being communicated with a balanced flow boiler, the inner duct nesting, at its opposite end portion, in a flue element.

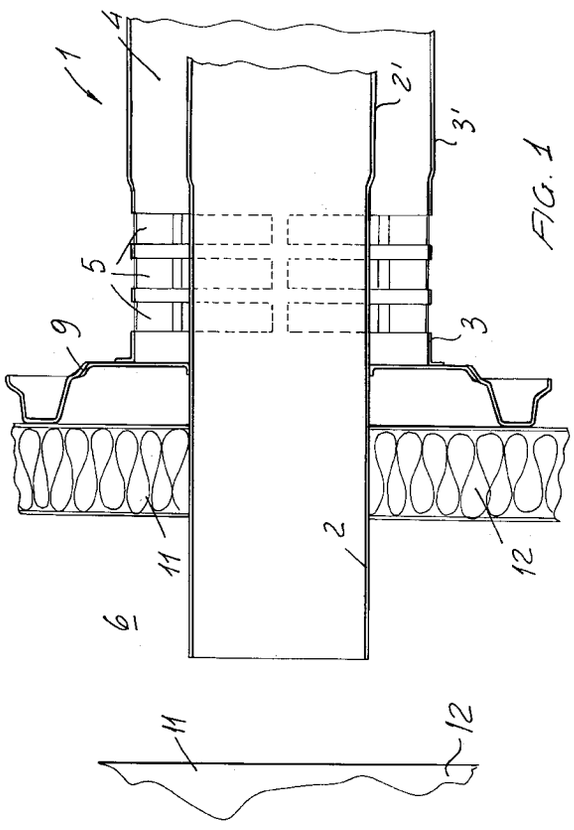

FIG. 1

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BACKGROUND OF THE INVENTION

The present invention relates to a fitting for coupling air and fume pipes in tightly enclosed boilers.

As is known, a proper installation of gas boiler in apartments, for generating hot water, to be used for hygienic and sanitary services and/or for heating purposes, involves great problems, both with respect to the availability of combustion air, and with respect to the proper discharging of the combustion fumes.

In fact, a burning of a fuel gas requires, for a proper combustion thereof, very great air amounts which must be necessarily sucked from the outside, in order not to excessively dangerously reduce the oxygen contents of the air in a room.

Also known is the fact that, in order to meet the above mentioned requirement, there are conventionally used coaxial pipes the pipe elements of which define an annular gap therethrough outside air is sucked, possibly with the help of a sucking device or aspirator, the inner pipe being provided for conveying the fumes outside of the room.

These coaxial pipes or tubes, however, are conventionally installed on a wall, which alters the aesthetic aspect of the wall, and requires very long installation and assembling times.

Separated sucking and discharging ducts can also be provided which, however, do not solve the above mentioned drawback.

In fact, the use of separated pipes involves further drawbacks for properly installating the boiler.

SUMMARY OF THE INVENTION

Accordingly, the aim of the present invention is to overcome the above mentioned drawbacks, by providing a fitting for coupling air and fume pipes in tightly enclosed boilers, which can be installed in a very quick and simple way.

Within the scope of the above mentioned aim, a main object of the present invention is to provide such a fitting which assures a proper sucking of the air, under any operating conditions.

Another object of the present invention is to provide such a fitting which is very simple construction wise and very reliable in operation.

According to one aspect of the present invention, the above mentioned aim and objects, as well as yet other objects, which will become more apparent hereinafter, are achieved by a fitting for coupling air and fume pipes in tightly enclosed boilers, characterized in that said fitting comprises two coaxially arranged ducts, the outer of which, of smaller length, encompasses the inner duct at one end of the latter so as to define, with said inner duct, a gap provided with a plurality of air inlets, said inner duct and gap being communicated with a balanced flow boiler, the inner duct nesting, at the opposite end portion thereof, in a flue element.

BRIEF DESCRIPTION OF THE DRAWINGS

Further characteristics and advantages of the fitting according to the present invention will become more apparent from the following detailed disclosure of a preferred, though not exclusive, embodiment thereof which is illustrated, by way of an indicative but not limitative example, in the figures of the accompanying drawings, where:

Figure 1 is a schematic longitudinal cross-sectional view illustrating the fitting according to the present invention;

Figure 2 illustrates a possible procedure for coupling an individual boiler to an outer flue element;

Figure 3 illustrates the coupling of an individual boiler to an inner flue element.

DESCRIPTION OF THE PREFERRED EMBODIMENT

With reference to the figures of the accompanying drawings, the fitting for coupling air and fume pipes in tightly enclosed boilers according to the present invention, which has been generally indicated at the reference number 1,essentially comprises a first duct 2 to an end portion of which is coaxially coupled a second duct 3, said ducts 2 and 3 cooperating for defining an annular gap 4 which communicates to the outside environment through a plurality of circumferential slots 5.

These two ducts end, at their common portion, with corresponding cup joints, respectively indicated at 2′ and 3′, which are provided for receiving corresponding end portions of conventional coaxial pipes, like those which are usually employed for sucking combustion air and discharging combustion fumes in the balanced flow boilers, which are also called "tightly enclosed boilers" or, simply, "tight boilers".

The thus constructed fitting is installed so that the air inlets 5 of the duct 3 are arranged outside of the building or within a sufficiently aerated skylight passage.

More specifically, in the case of a flue 6 arranged on the outside of the building, as shown in figure 2, the air inlets or sucking openings are arranged between the wall 7 of the building and said flue element.

On the other hand, as the flue element is arranged inside the building, as shown in figure 3, there is provided and aerated skylight passage 8, in which there is engaged the mentioned fitting.

In particular, the disclosed fitting, for coupling the boiler and flue element, is restrained to the latter through the mentioned outer duct 3, by using a suitable collet 9.

In this connection, it should be pointed out that the mentioned flue element is advantageously made

with a double-wall construction so as to define, in turn, an annular gap 10 which is filled by a suitable insulating material 11.

It should be also apparent that the flue element, either at the outside or on the inside, can receive the combustion fumes discharged from several boilers, each arranged at different floors of the buildings.

From the above disclosure and the figures of the accompanying drawings it should be apparent that the invention fully achieves the intended aim and objects.

While the invention has been disclosed and illustrated with reference to a preferred embodiment thereof, it should be apparent that the disclosed embodiment is susceptible to several modifications and variations all of which will come within the spirit and scope of the appended claims.

Claims

1. A fitting for coupling air and fuel pipes in tightly enclosed boilers, characterized in that said fitting comprises two coaxially arranged ducts, the outer of which, of smaller length, encompasses the inner duct at one end of the latter so as to define, with said inner duct, a gap provided with a plurality of air inlet, said inner duct and gap being communicated with a balanced flow boiler, the inner duct nesting, at the opposite end portion thereof, in a flue element.

2. A fitting, according to claim 1, characterized in that said fitting comprises a first duct, to one end of which there is coaxially coupled a second duct, said first and second ducts defining an annular gap which is opened to the outside through a plurality of circumferential slots.

3. A fitting, according to one or more of the preceding claims, characterized in that said two ducts end, at their common portion, with corresponding cup joints in which there are engaged the end portions of corresponding coaxial pipes, like those which are usually employed for supplying combustion air and discharging combustion fumes in balanced flow boilers, or tightly enclosed boilers.

4. A fitting, according to one or more of the preceding claims, characterized in that said fitting is adapted to be installed so that the air inlets of said gaps are completely arranged outside of a building or inside a properly aerated skylight passage.

5. A fitting, according to one or more of the preceding claims, characterized in that, in the case of a flue arranged outside of the building, the air inlets of said fitting are arranged between the wall of the building and said flue and, as the flue is arranged inside the building, there being provided an aerated skylight passage in which there is engaged said fitting.

6. A fitting, according to one or more of the preceding claims, characterized in that said fitting is restrained to said flue by its outer duct through a collet element, said flue having a double-wall construction so as to define, in turn, an annular gap which is filled by an insulating material.

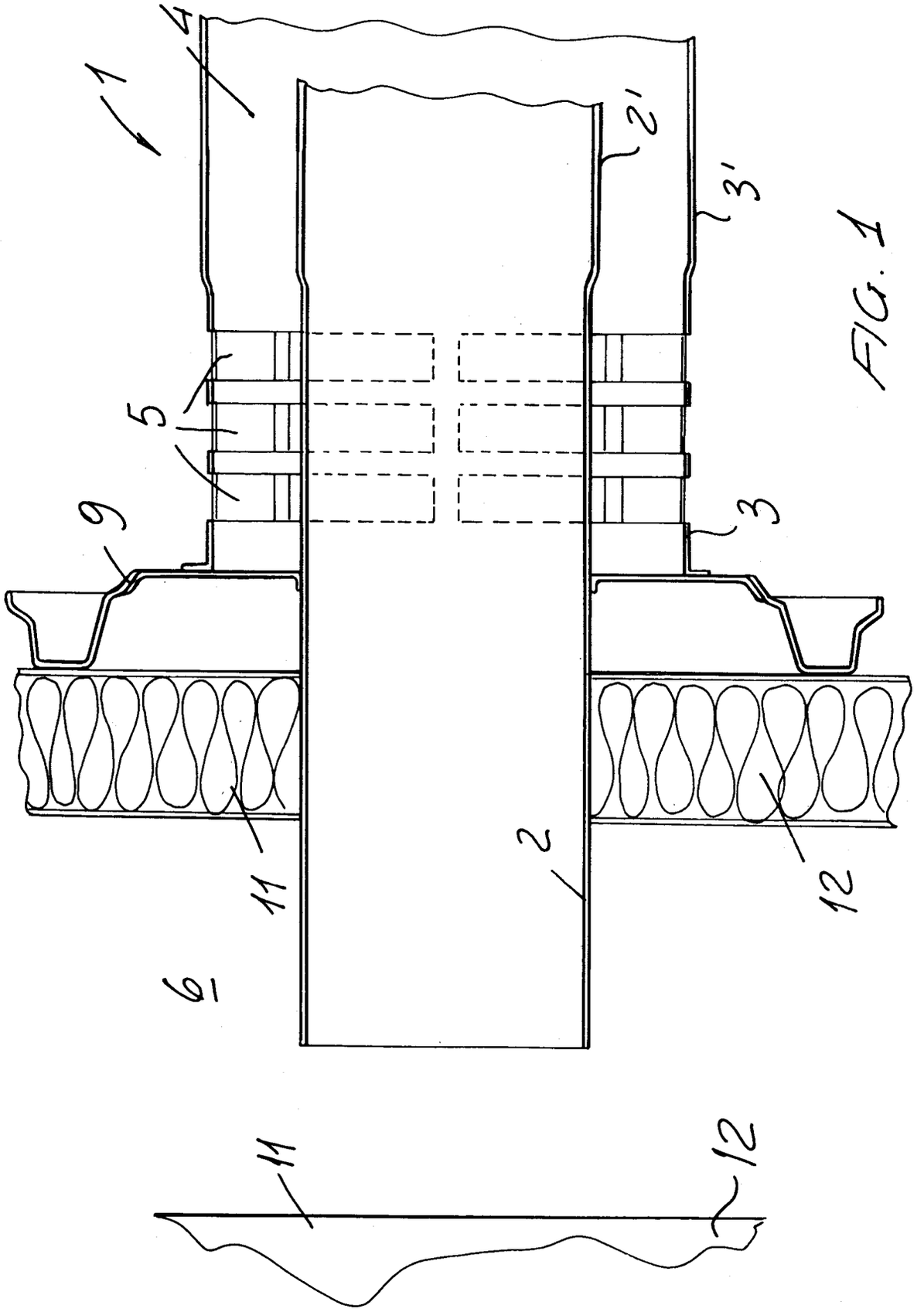

FIG. 1

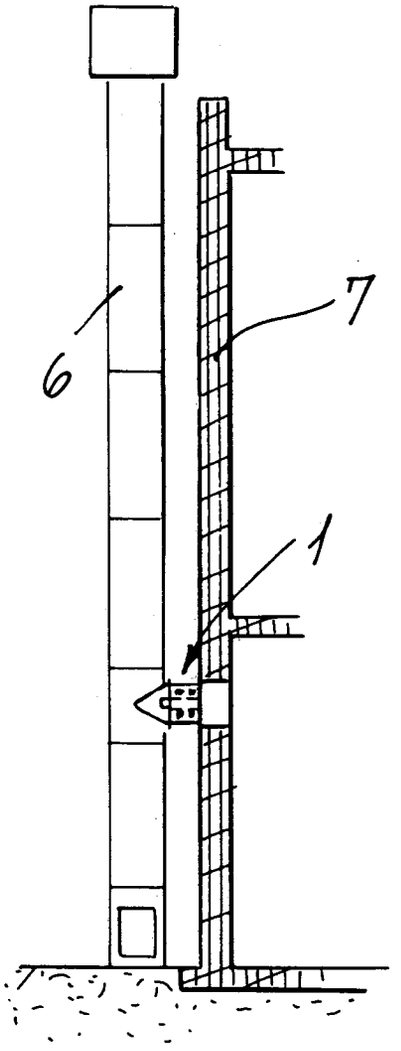

FIG. 2

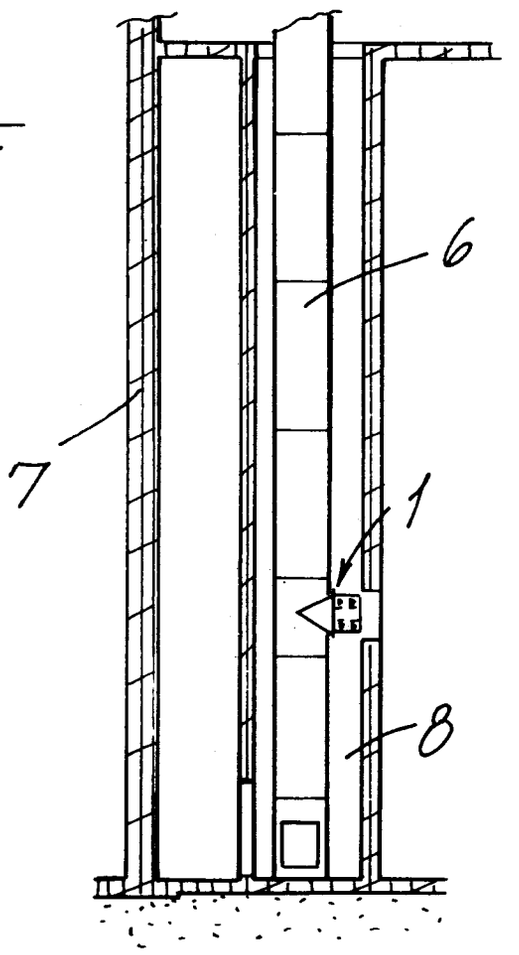

FIG. 3